

A US perspective on the shortcomings of PTCA

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In the past decade, significant improvements in the acute outcome of angioplasty (PTCA) have been achieved with mortality rates below 1% and emergency surgery rates of 1–3% being met by most institutions. Nonetheless, numerous shortcomings exist. Acute results, as impressive as they are with stenting, effective antiplatelet therapy, and other measures are only the beginning of the story. The long term clinical outcome unfortunately has not shown a dramatic improvement.

It is perhaps ironic that most of the shortcomings of PTCA have been discovered while performing trials to demonstrate improvements in the technique. Trials such as CAVEAT,¹ lovastatin restenosis trial,² and STRESS,³ showed that the restenosis rate was 40–50% in the balloon treated relatively ideal lesions and was only reduced to 32% when stents were used in STRESS.³ The EAST study⁴ showed that multivessel disease patients have a restenosis rate per lesion of 44%. BARI⁵ and EAST⁴ patients had five year survival comparable to randomly assigned surgical patients, however, over 50% required additional procedures.

Will these clinical results change significantly with new technology anchored by stents? Although restenosis rates have been reduced by one third in STRESS and Benestent I,⁶ and by 50% in Benestent II,⁷ these represent the minority of lesions treated. One third of all patients treated at Emory University Hospital have had prior bypass surgery. The SAVED trial⁸ showed a non-significant trend towards reduction in restenosis in stented vein grafts. Others have seen stent restenosis rates ranging from 27–40% in ostial lesions, long lesions, small vessels, restenotic lesions, etc. In-stent restenosis has been a particularly difficult condition to treat successfully.

In the US, 30–40% of patients treated with PTCA receive stents. Is the fact that only two stent designs are currently approved blunting stent usage and impeding improved results? There are few follow up data on the superiority of the new generation stents, although certain lesions unstenable with available devices could have new generation stents placed. As these applications extend stent use beyond the indications for which we have documented

improved restenosis rates, the long term clinical benefit of more extensive stenting must, for the time, remain speculative. Recent experiments using endovascular radiation to reduce recurrent restenosis in stents is encouraging and other methods are also needed.⁹

Finally, the success of PTCA has also become something of a shortcoming. In the US, approximately 6000 cardiologists identified themselves as performers of PTCA. The experience level for many operators is therefore very small. As new technologies emerge, it is crucial that operators have adequate experience. Many practice groups are now concentrating the PTCA experience among a few members, and the American Board of Internal Medicine has established a certificate of added qualification that will certify those with a significant level of training and expertise to be considered board certified interventional cardiologists. This move will help strengthen the discipline so that scientific solutions to the shortcomings of PTCA may be expertly applied to patients.

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